Michael Bradley <mbradley@utah.gov>

Prelim Response to BLM Letter 2-13-15

INCOMING M/037/0088

1 message

Lantz Indergard <LIndergard@lisbonmine.com> Tue, Feb 17, 2015 at 2:10 PM
To: "Mike Bradley (mbradley@utah.gov)" <mbradley@utah.gov>

Mike:

As discussed. Our preliminary comments are provided for your use in tomorrow's meeting with the BLM. Thanks for your continued support.

Lantz M Indergard PG
Environmental and Exploration Manager
Lisbon Valley Mining Co LLC
920 South County Road 313
La Sal Utah 84530
Lindergard@lisbonmine.com<mailto:Lindergard@lisbonmine.com>
435 686 9950 #107

"Some people go with the flow. Others swim."

Prelim_Rspns_BLM_Letter 2_13_15_lmi.docx
5282K

LVMC Preliminary Review of BLM Response Letter 2-13-15

RECEIVED E-Mail

FEB 17 2015

Div. of Oil, Gas & Mining

Comment

Lisbon Valley contends that the data collected and presented to date clearly shows that there is no uncertainty of impacts and no scientific controversy to post-mining groundwater quality associated with the partial backfilling modification. However, the record indicates that uncertainty remains. For instance, selected column tests (kinetic) were not conducted for a sufficient time period to provide a representation of quasi equilibrium conditions with respect to uranium concentrations in the pore fluids. Even though the BLM approved a *Work Plan for Additional Geochemical Testing of Lisbon Valley Mine Waste Rock* on February 12, 2014, the test was inconclusive in that the kinetic test was not run to the point of convergence[1]. Because of the short duration of the test, the concentration of uranium that can be potentially released by Bed 15 is indeterminate.

Response

The kinetic testing conclusively showed that the concentration of uranium released from Bed 15 was below the background concentrations in groundwater below the Centennial Pit. It was not necessary to continue running additional pore volumes through the columns to reach this conclusion. Additionally, a mix of Bed 14 and Bed 15 materials will comprise the backfill, and the uranium concentration in leachates from the mix of Bed 14 and Bed 15 will be significantly lower than leachates from the monolithologic Bed 15 columns. The uranium concentrations from a proposed mix of Bed 14 and Bed 15 and from Bed 15 itself are below the protection levels listed in the Ground Water Discharge Permit for wells below the Centennial Pit. As reported to BLM in the letter to Kent Hoffman, dated 12-30-14:

The raw unadjusted concentrations from the monolithologic Bed 15 leachates do not represent the expected concentration of groundwater in backfill because the proposed action includes 7% Bed 15 and 93% Bed 14. To correctly predict the backfilling concentration, the column leachate results must be mixed in this ratio and equilibrated. A simple mixing calculation of 7% Bed 15 and 93% Bed 14 produces uranium concentrations of 0.0174 to 0.0213 mg/L for PV0.5 to PV3. As shown in the attached table, the expected groundwater concentration in the backfill under the proposed action is significantly lower than the permit maximum background concentrations for uranium at MW2A, SLV1A, PW-3, and MW96-7A and also well below the drinking water standard of 0.03 mg/L.

There is no uncertainty on this point.

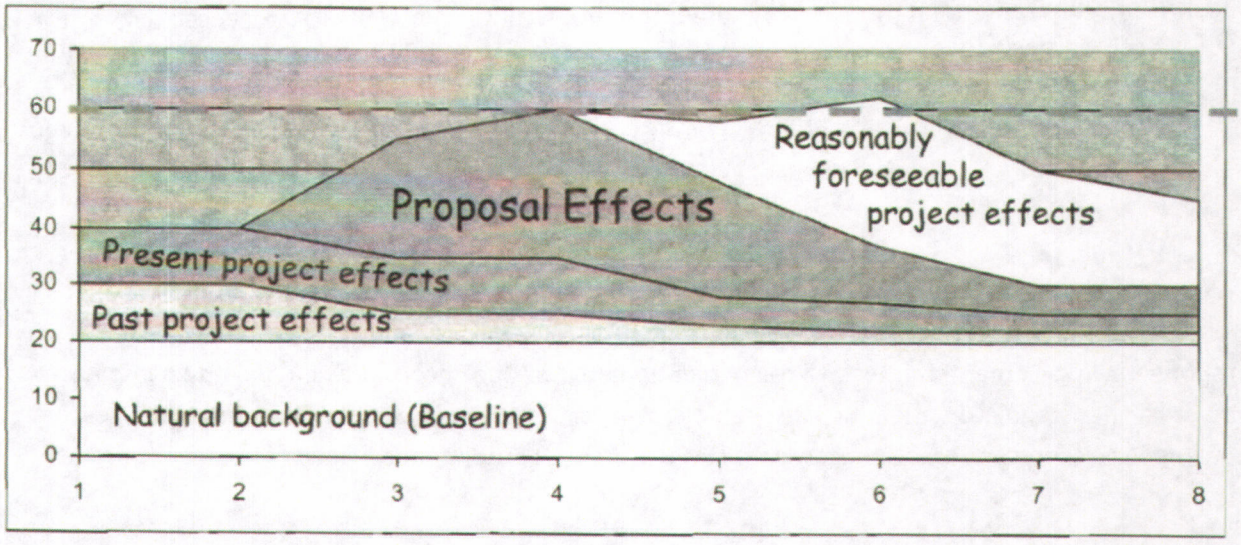
Comment

Further, the geochemistry of the waste rock material and hydrological model were reviewed by David Naftz Ph.D. and Tom Marston M.Sc. (research geochemist and hydrologist with USGS/Utah Water Science Center respectively) and Paul Summers (senior hydrogeologist at the BLM National Operations Center). Their assessments of the data provided by Lisbon Valley raised concerns that uranium concentration will remain above acceptable levels in post-mining ground water after more than three pore volumes have passed. Depending on the post-mining hydrology these results suggest the elevated uranium concentration could persist in the groundwater for hundreds or perhaps thousands of years and could migrate from the Centennial Pit. It appears that a lack of data and/or the interpretation of the existing data are the core issues in this case, rather than scientific controversy as it pertains to the NEPA. In the absence of basic scientific data, the preparation of an EIS will not resolve those core issues.

Response

"Acceptable Levels" must be defined as pre-mining baseline concentrations or permit-defined groundwater protection levels (GWPLs) established by UDEQ for this site. Naptz, Marson, and Summers compared uranium concentrations in raw Bed 15 leachates with drinking water MCLs. There are several problems with this approach: (1) MCLs are not applicable where the water is not used for drinking and UDEQ has established GWPLs, (2) the raw Bed 15 leachates do not represent the leachate concentration from the proposed backfill which consists of a mix of Bed 14 and Bed 15, and (3) even the raw Bed 15 leachates are not elevated compared to pre-mining uranium concentrations in pre-mining background groundwater below the pit.

The NEPA process requires that potential impacts be evaluated relative to baseline conditions, as shown in the figure below. It is inappropriate to use drinking water standards as the basis for evaluating impacts under NEPA, for an aquifer that has been determined to be a Class III aquifer by the regulatory agency that has primacy over water quality at the site.



Comment

Another concern is if the proposed action being reviewed by BLM is the same that is being reviewed by the State of Utah, Department of Environmental Quality, Division of Water Quality. The August 12, 2014, letter to Moab Field Office Manager Beth Ransel from Dan Hall refers to

---

the Modification as "Backfilling the Centennial Pit." The BLM record refers to the modification as a "partial backfill." It also appears that USGS, the State Minerals Reclamation Program and the Moab BLM Field Office all have different understanding of what the proposal is (complete or partial backfilling of the Centennial Pit)[2] and whether or not the modeling predicts a pit lake.[3] It is vitally important to ensure that the Plan of Operations modification is complete and that State regulators and BLM personnel are evaluating the same proposal.

Response

All backfilling scenarios are partial backfilling scenarios. There is no way to completely backfill the Centennial Pit, and this has been discussed numerous times. All proposed scenarios (25MM tons, 50MM tons, and 75MM tons) cover the 6190' pre-mining groundwater elevation. Since the pre-mining groundwater elevation is covered , no pit lakes form under any backfilling scenario.

Comment

backfilling the Centennial pit. The key to getting the permitting and NEPA process back on track is for both parties to work together to resolve inconsistences in the information provided. Once the data is determined to be sufficient and general agreement in its interpretation is reached, preparation of an EA is a viable approach to assessing environmental impacts. Any analysis must

Response

LVMC was never invited to resolve the apparent "inconsistencies" identified by the letter. Meetings were conducted between regulatory agencies only (BLM-DOGM-UDEQ July 2014). Without the proponent's involvement, this lead to the perception of scientific uncertainty and unknown impacts. An additional inter-regulatory meeting has been planned for Feb 18th without the proponent. It is unclear how the BLM expects to resolve inconsistencies without the proponent's involvement. There are no inconsistencies.

Comment

preparation of an EA is a viable approach to assessing environmental impacts. Any analysis must address each reason given in the 1997 ROD and Memorandum dated January 25, 1999 as to what has changed to reverse BLM's 1997 decision that pit backfilling has the potential for alkaline mobilization of oxyanions in post-mining groundwater by placing waste rock in saturated conditions. If a Finding of No Significant Impact cannot be reached, then an EIS should be prepared if Lisbon Valley would still like to pursue the modification.

Response to Jan 25, 1999 Memorandum – What has Changed?

The following analysis addresses each reason given in the 1997 ROD and 1999 Memo as to what has changed to reverse the 1997 Decision.

1999 Reason #1

1- The analysis indicates under both backfill scenarios, that there would be water quality impacts from backfilling the pits with material from the waste dumps, due to the chemical makeup of the waste rock backfill material, particularly the acid generating material. With the tremendous increase in surface area exposed in the rubbilized backfill material, chemical reactions between this material and the groundwater could present a host of unquantifiable adverse impacts to the downgradient aquifers, resulting from chemical interactions of groundwater and the waste rock.

Response

No acid-generating material is now being proposed for backfilling. Current kinetic testing quantifies any adverse impacts impacts relative to the approved pit pool. A FONSI was reached for the pit pool. Backfilling is less of an impact, therefore the FONSI determination is preserved.

1999 Reason #2

> Prior to utilizing on-site waste material for backfilling, Summo should be required to run an acceptable testing procedure (kinetic testing) to allow accurate determinations of geochemical leachates that could be expected from the material if placed in a sub-aqueous alkaline environment. If testing indicates unacceptable leachates, which could migrate into downgradient groundwater, additional inert materials may have to be utilized from outside the project area.

Response

LVMC has conducted kinetic testing in accordance with a workplan approved by USGS, DOGM, and BLM. This new information was generated in 2014 and was not available during the decision-making process in 1998 - 1999.

1999 Reason #3

> Additionally, overburden and waste rock placed in a backfill will usually be characterized by reduction in particle size and subsequent increase in surface area due to blasting and excavating. If the backfill material is placed within the influence of the groundwater table, 1) the increased surface area of the excavated material commonly results in increased mineral-water interface contact, and 2) may result in consequent mineral dissolution and transport by groundwater movement through the backfill. Depending upon the chemistry and permeability of waste-rock types comprising the backfill, possible infiltration of groundwater into these materials has potential to produce the unintended consequence of mobilizing such elements as arsenic, molybdenum and selenium as oxyanions. (Emphasis added).

Response

The kinetic testing was designed and carried out to address this issue. The rock material subjected to kinetic testing was screened to 0.75-inch to provide adequate water:rock contact and to prevent preferential flow along the grain-wall contact in the columns. The entirety of each sample was screened to pass the 0.75-inch wire mesh and any oversized material was reduced by hand breaking or jaw crushing to meet the size specification. Groundwater from the Burro Canyon aquifer was used as the head solution, and the columns were run as saturated up-flow columns to simulate groundwater moving up into the backfill.

The kinetic tests results showed that arsenic and molybdenum would remain well below the GWPLs and drinking water MCLs. Molybdenum results were below the practical quantitation limit (PQL) in all leachates and below the detection limit (DL) in all Bed 14 column leachates. Arsenic concentrations were well below drinking water MCLs and the background GWPLs established for the site. Selenium concentrations were elevated in the first one-half and one pore volume and decreased to <0.005 mg/L within two pore volumes. The column leaches showed that selenium would not be mobilized in groundwater for the long-term because selenium concentrations were below detection by the second pore volume.

In contrast, the current approved action will have an exposed pit pool with evapoconcentrated metals and oxyanions. The 1999 memo recognized that there was uncertainty "depending on the chemistry...of waste rock types". The specific backfilling proposed action and specific kinetic testing have resolved this uncertainty.

1999 Reason #4

The additional Meteoric Water Mobility Procedures (MWMP) leaching tests were performed under third party contract by Adian Brown Consultants. The results of these additional leaching tests were transmitted to BLM in a technical memorandum dated December 3, 1997, from Mark Williamson, PhD. Geochemist with Adrian Brown Consultants, to Lynn Jackson, BLM Project Manager. This memorandum outlined the results of MWMP leach tests conducted on 24 waste-rock samples collected by drill holes and tested according to procedures established by Mr. White.

The Williamson memorandum indicates at p. 2 the significance and use of the data as follows:

A. This procedure is intended as a means for obtaining extracts from mine rock samples. The extracts may be used to evaluate the final pH and release of certain constituents of mine rocks exposed to meteoric events.

B. The pH of the extraction fluid used in this procedure is to reflect the pH of the groundwater in the site area.

C. This procedure is designed to mobilize potential contaminants present in the solids, so that the resulting extract can be used to assess leachate which could potentially be produced from mine rock in the filed.

D. This procedure produces extracts that are amenable to the determination of both major and minor (trace) constituents. When minor constituents are being determined, it is especially important that precautions be taken in sample storage and handling to avoid possible contamination of the samples.

The results of these tests are presented in detail as tabulated analytical data on 31 pages attached to the report. Analysis of this data indicated that selenium, arsenic and molybdenum were in fact mobilized by exposures to meteoric water (such as would occur in the post-mine pits), and more importantly, the degree of mobilization generally increased with increasing pH levels. The results of these tests on leaching characteristics of the potential backfill material effectively confirmed BLM's concerns identified in the FEIS and ROD of utilizing waste rock from the mining operation as backfill material in the pits.

Response

The above-referenced MWMP tests were conducted on all waste rock types. Only Beds 14 and 15 are proposed for backfill. Both MWMP and kinetic testing demonstrates this material suitable for backfilling by comparing results to baseline conditions and GWDP standards.

1999 Reason #6

Based on the concerns identified with this issue in the FEIS, the ROD did two things. First it required, as a condition of approval, additional Meteoric Water Mobility Procedure sampling, testing and reporting of all waste rock to be mined during the operation (ROD, pp. 22-24), with a particular emphasis on leaching tests of potential backfill material. These tests would, over time, demonstrate what oxyanions concentrations and mobilization would occur during interactions with post-mining pit waters.

Response

LVMC has complied with the requirement for additional MWMP analysis of all waste rock since mining began in 2005. The results demonstrate oxyanion concentrations in the proposed backfill (Beds 14 and 15) that are below baseline conditions, GWDP levels, and preferable to a FONSI for pit pool. These results are documented in the Annual Waste Rock Monitoring reports.